

**WE CLAIM:**

1. A method of detecting and quantifying EGFRvIII in a  
5 mammal, comprising performing an ELISA specific for EGFRvIII with a  
biological sample from said mammal.

2. The method of **Claim 1**, wherein the biological sample is at  
least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast  
10 secretions, lung sputum, or tumor cell extracts.

3. A method of detecting cancer in a mammal, comprising  
performing an ELISA specific for EGFRvIII with a biological sample from  
said mammal.  
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4. The method of **Claim 3**, wherein the biological sample is at  
least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast  
secretions, lung sputum, or tumor cell extracts.

5. The method of **Claim 3**, wherein said cancer is at least one of  
20 the group of breast cancer, adenocarcinoma, squamous lung cancer,  
gastrointestinal cancer, renal cell cancer, bladder cancer, glioma,  
gynecological carcinoma, or prostate cancer.

6. A method of selecting a mammal with cancer for novel  
25 mutant EGF-directed anticancer therapies from at least one of the group  
of a vaccine, an antibody-toxin conjugate, or EGFRvIII-specific tyrosine  
kinase inhibitors, comprising performing an ELISA specific for EGFRvIII  
with a biological sample from said mammal, analyzing results of said  
30 ELISA, and selecting at least one of the group of said mutant EGF-  
directed anticancer therapies.

7. The method of **Claim 6**, wherein the biological sample is at least one of the group of urine, serum, plasma, CSF, amniotic fluid, breast secretions, lung sputum, or tumor cell extracts.

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8. An ELISA for the sensitive detection of wild type and/or EGFRvIII in a mammalian sample of urine, serum, plasma, CSF, amniotic fluid, breast secretions, lung sputum, tumor cell extracts, or any extracellular or cellular fluids.

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9. A method of detecting a preneoplastic lesion in a mammal, comprising performing an ELISA specific for EGFRvIII with a biological sample from said mammal.

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10. The method of **Claim 9**, wherein the preneoplastic lesion is Barrett's esophagus.

11. A method of detecting benign prostatic hyperplasia in a mammal, comprising performing an ELISA specific for EGFRvIII with a biological sample from said mammal.

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12. A method of generating antibodies specific for EGFRvIII, comprising:

preparation of an antibody against the mutant EGF receptor by immunizing a mammal with at least one of a mutant receptor protein, an epitope of said mutant receptor protein, a sequence that mimics said epitope, or DNA encoding said mutant receptor protein or epitope;

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obtaining a high titer antibody preparation from said mammal, said antibody preparation recognizing mutant EGF and wild type (wt) receptor;

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pooling bleeds from said mammal, concentrating and partially purifying said bleeds by precipitation;

obtaining a pellet from said precipitation and dialyzing said pellet;

and

passing said (antibody preparation) dialyzed pellet over an affinity  
matrix column (with said epitope) and eluting antibodies from said column  
5 to obtain antibodies specific for EGFRvIII.

13. The method of **Claim 12**, wherein said epitope comprises  
EKKGNYVV (SEQ ID NO:5), a fragment of said sequence, or a modification of said  
sequence.

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14. The method of **Claim 12**, wherein said epitope comprises  
LEEKKGNYVVDH (SEQ ID NO:1), a fragment of said epitope, or a modification  
of said epitope.

15 15. The method of **Claim 12**, wherein said epitope comprises  
KGN (SEQ ID NO:6) or a modification of said epitope.

16. The method of **Claim 12**, wherein said epitope comprises  
LEEKKC (SEQ ID NO:2), a fragment of said epitope, or a modification of said  
20 epitope.

17. The method of **Claim 12**, wherein said epitope comprises  
EKK (SEQ ID NO:7) or a modification of said epitope.

25 18. The method of **Claim 12**, wherein said epitope comprises  
NYVVDH (SEQ ID NO:8), a fragment of said epitope, or a modification of said  
epitope.

19. The method of **Claim 12**, wherein said epitope comprises  
30 NYV (SEQ ID NO:9) or a modification of said epitope.

20. A method of generating antibodies specific for EGFRvIII,  
comprising:

preparation of an antibody against the mutant EGF receptor by  
immunizing a mammal with at least one of a mutant receptor protein, an  
epitope of said mutant receptor protein, a sequence that mimics said  
5 epitope, or DNA encoding said mutant receptor protein or epitope;  
obtaining serum from said; and  
passing said serum over an affinity matrix column and eluting  
antibodies from said column to obtain antibodies specific for EGFRvIII.

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